

WHAT IS CLAIMED IS:

Sub A<sup>10</sup> 1. An apparatus for rotatably driving a floor cloth employed in a suction assembly of a vacuum cleaner, the vacuum cleaner drawing in and collecting air and dust in a dust collecting chamber through an air path connecting a suction assembly to a connecting pipe by a negative pressure generated by an operation of a driving portion that is activated by manipulating a driving switch of a handle portion, the apparatus comprising:

a rotary member rotatably disposed on a lower end of the suction assembly, for supporting the floor cloth cleaning a cleaning surface;

rotary driving means on-off controlled by the manipulation of the driving switch, for supplying a driving force for rotating the rotary member in an on-state; and

power supplying means for supplying an electric signal from the manipulation of the driving switch to the rotary driving means.

2. The apparatus of claim 1, wherein the power supplying means is disposed in a separate space of the connecting pipe that is protected by a protective cover from the air path, and includes a power terminal electrically connected to the driving switch of the handle portion, and a power conductor for electrically connecting the power terminal to the power driving means.

3. The apparatus of claim 1, the rotary driving means includes a bi-directional rotary motor having a pair of rotary shaft portions formed on both sides of the rotary motor and simultaneously rotated with each other by the power supplied from the power supplying means, and a power transmission unit disposed for transmitting the driving force of the rotary shaft portions to the rotary member.

4. The apparatus of claim 3, wherein the power transmission unit includes a pair of worm gear members connected to the rotary shaft portions for being rotated in the same direction as the rotary shaft portions are rotated; and transmission gears meshed with the pair of worm gear members for converting a rotational force of the worm gear members into a perpendicular direction and transmitting the converted rotational force to the rotary member.

5. The apparatus of claim 4, wherein the worm gear members are connected to the rotary shaft portions by joint connecting members, respectively.

Sub A'' 6. The apparatus of claim 4, wherein the worm gear members have threads formed on outer circumferences thereof in an opposite direction from each other, for being rotated in the opposite direction when the transmission gears are rotated.

7. The apparatus of claim 3, wherein the power transmission unit includes a transmission gears connected to the rotary member; and a worm gear member having a worm gear portion formed on the outer circumference of the worm gear member for being meshed with the transmission gear, and a key portion formed on one end of the worm gear member for being connected to the rotary shaft portion of the rotary driving means in a key way.

8. The apparatus of claim 7, wherein either the key portion or the rotary shaft portion has a key groove having a non-circular section formed on one end, while either the key portion or the rotary shaft portion without the key groove has a key portion that is formed on one end having corresponding shape to the key groove.

9. The apparatus of claim 7, wherein each of the worm gear members have threads formed on the outer circumference in an opposite direction so that the transmission gears can be rotated in the opposite direction.

10. The apparatus of claim 3, wherein the power transmission unit includes a transmission gears connected to the rotary member; and a worm gear member having a worm gear portion formed on the outer circumference of the worm gear member for being meshed with the transmission gear, and a connecting portion formed on one end of the worm gear member for being screwed to the rotary shaft portion of the rotary driving means.

11. The apparatus of claim 10, wherein either the connecting portion or the rotary shaft portion has a male thread formed on the outer circumference, while either the connecting portion or the rotary shaft portion without the male thread has a female thread formed on the end corresponding to the male thread.

12. The apparatus of claim 10, wherein the threads formed on the connecting portion and the rotary shaft portion are left-hand threads for screw-fastening when the rotary shaft portion is rotated on the rotary shaft in a clockwise direction.

13. The apparatus of claim 10, wherein the threads formed on the connecting portion and the rotary shaft portion are right-hand threads for screw-fastening when the rotary shaft portion is rotated on the rotary shaft in a counterclockwise direction.

14. The apparatus of claim 10, wherein the threads on the outer circumferences of the worm gear members are formed in an opposite direction so that the transmission gears are rotated in the opposite direction.

15. The apparatus of claim 1, further comprising a casing member formed in the suction assembly for enclosing the rotary driving means, thereby screening the rotary driving means from the air path of the suction assembly.

16. The apparatus of claim 15, wherein the casing member has a lower casing having openings formed on a bottom through which the transmission gears are directly

connected to the rotary members, respectively, and a plurality of fixing means for rotatably supporting the worm gear members; and an upper casing connected to an upper portion of the lower casing for screening the rotary driving means mounted on the lower casing from the outside.

5           17.     The apparatus of claim 1, further comprising removable means for removably supporting the floor cloth onto the rotary members.

          18.     The apparatus of claim 17, wherein the removable means includes at least one Velcro fastener disposed on a lower surface of the rotary members in a predetermined pattern.

10           19.     The apparatus of claim 18, wherein the Velcro fastener is seated on a plurality of recesses formed on the lower surface of the rotary members around a center of rotation at a uniform distance from each other.

          20.     The apparatus of claim 18, wherein the Velcro fastener is disposed on the lower surface of the rotary member around the center of rotation at an angle of 120°.

15           21.     A floor cloth removably employed in a mounting portion at a lower end of a suction assembly of a vacuum cleaner, the floor cloth for mopping impurities on a cleaning surface, the floor cloth comprising:

          a body contacting the cleaning floor;

          a removable layer attached to an upper surface of the body, supportable by a

20           binding force with removable means formed on the mounting portion; and

          supporting means for improving cleaning efficiency by preventing

          deformation of the body and enabling easier contact against the cleaning surface,

          when the body contacts the cleaning surface.

22. The floor cloth of claim 21, wherein the body and the removable layer are connected with each other by an adhesive.

23. The floor cloth of claim 21, wherein the supporting means includes a supporting member disposed between the body and the removable layer, for recovering the  
5 body into an original shape, elastically.

24. The floor cloth of claim 23, wherein the supporting member is formed of a porous material capable of absorbing a liquid during a wet cleaning with respect to the cleaning surface.

25. The floor cloth of claim 21, wherein the supporting means includes a  
10 protruding pattern protruding from a lower surface of the body contacting the cleaning surface in a predetermined pattern.

26. The floor cloth of claim 25, wherein the protruding pattern includes a plurality of protruding lines protruding from the lower surface of the body contacting the cleaning surface in a linear pattern.

15 27. The floor cloth of claim 25, wherein the protruding pattern is formed of a fabric that is identical with the fabric of the body.

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